



## SEQUENCE LISTING

<110> SHERMAN, LINDA A.  
LUSTGARTEN, JOSEPH

<120> RECOMBINANT CONSTRUCTS ENCODING T CELL RECEPTORS  
SPECIFIC FOR HUMAN HLA-RESTRICTED TUMOR ANTIGENS

<130> 46147/55793

<140> 08/812,393  
<141> 1997-03-05

<160> 64

<170> PatentIn Ver. 2.1

RECEIVED

<210> 1  
<211> 1350  
<212> DNA  
<213> Artificial Sequence

MAY 14 2003

<220>  
<221> CDS  
<222> (1)..(1332)

TECH CENTER 1600/2900

<223> Description of Artificial Sequence: Synthetic  
single chain TCR derivative nucleotide sequence

<400> 1  
ctc gag atg cag agg aac ctg gga gct gtg ctg ggg att ctg tgg gtg 48  
Leu Glu Met Gln Arg Asn Leu Gly Ala Val Leu Gly Ile Leu Trp Val  
1 5 10 15

cag att tgc tgg ctg aaa gaa cag caa gtg cag cag agt ccc gca tcc 96  
Gln Ile Cys Trp Leu Lys Glu Gln Val Gln Gln Ser Pro Ala Ser  
20 25 30

ttg gtt ctg cag gag ggg gag aac gca gag ctc cag tgt agc ttt tcc 144  
Leu Val Gln Glu Gly Glu Asn Ala Glu Leu Gln Cys Ser Phe Ser  
35 40 45

atc ttt aca aac cag gtg cag tgg ttt tac caa cgt cct ggg gga aga 192  
Ile Phe Thr Asn Gln Val Gln Trp Phe Tyr Gln Arg Pro Gly Gly Arg  
50 55 60

ctc gtc agc ctg ttg tac aat cct tct ggg aca aag cag agt ggg aga 240  
Leu Val Ser Leu Leu Tyr Asn Pro Ser Gly Thr Lys Gln Ser Gly Arg  
65 70 75 80

ctg aca tcc aca aca gtc att aaa gaa cgt cgc agc tct ttg cac att 288  
Leu Thr Ser Thr Thr Val Ile Lys Glu Arg Arg Ser Ser Leu His Ile  
85 90 95

tcc tcc tcc cag atc aca gac tca ggc act tat ctc tgt gcc tca aat 336  
Ser Ser Ser Gln Ile Thr Asp Ser Gly Thr Tyr Leu Cys Ala Ser Asn  
100 105 110

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384

tct gga gga agc aat gca aag cta acc ttc ggg aaa ggc act aaa ctc  
Ser Gly Gly Ser Asn Ala Lys Leu Thr Phe Gly Lys Gly Thr Lys Leu  
115 120 125

tct gtt aaa tca ggt ggc gga ggg tct ggc ggg ggt gga tcc ggg ggt  
Ser Val Lys Ser Gly Gly Ser Gly Gly Gly Ser Gly Gly  
130 135 140

gga ggc tca gag gct gca gtc acc caa agc cca aga aac aag gtc gca  
Gly Gly Ser Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Ala  
145 150 155 160

gta aca gga gga aag gtc aca ttg agc tgt aat cag act aat aac cac  
Val Thr Gly Gly Lys Val Thr Leu Ser Cys Asn Gln Thr Asn Asn His  
165 170 175

aac aac atg tac ttg tat cgg cag gac acg ggg cat ggg ctg agg ctg  
Asn Asn Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu  
180 185 190

atc cat tat tca tat ggt gct ggc agc act gag aaa gga gat atc cct  
Ile His Tyr Ser Tyr Gly Ala Gly Ser Thr Glu Lys Gly Asp Ile Pro  
195 200 205

gat gga tac aag gcc tcc aga cca agc caa gag aac ttc ctc att  
Asp Gly Tyr Lys Ala Ser Arg Pro Ser Gln Glu Asn Phe Ser Leu Ile  
210 215 220

ctg gag ttg gct acc ccc tct cag aca tca gtg tac ttc tgt gcc agc  
Leu Glu Leu Ala Thr Pro Ser Gln Thr Ser Val Tyr Phe Cys Ala Ser  
225 230 235 240

ggt gag aca ggg acc aac gaa aga tta ttt ttc ggt cat gga acc aag  
Gly Glu Thr Gly Thr Asn Glu Arg Leu Phe Phe Gly His Gly Thr Lys  
245 250 255

ctg tct gtc ctg act agt aac tcc atc atg tac ttc agc cac ttc gtg  
Leu Ser Val Leu Thr Ser Asn Ser Ile Met Tyr Phe Ser His Phe Val  
260 265 270

ccg gtc ttc ctg cca gcg aag ccc acc acg acg cca gcg ccg cga cca  
Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Pro Ala Pro Arg Pro  
275 280 285

cca aca ccg gcg ccc acc atc gcg tcc cag ccc ctg tcc ctg cgc cca  
Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro  
290 295 300

tct agt tct aga gat ccc aaa ctc tgc tac ctg ctg gat gga atc ctc  
Ser Ser Ser Arg Asp Pro Lys Leu Cys Tyr Leu Leu Asp Gly Ile Leu  
305 310 315 320

ttc atc tat ggt gtc att ctc act gcc ttg ttc ctg aga gtg aag ttc  
Phe Ile Tyr Gly Val Ile Leu Thr Ala Leu Phe Leu Arg Val Lys Phe  
325 330 335

432

480

528

576

624

672

720

768

816

864

912

960

1008

agc agg agc gca gac gcc ccc gcg tac cag cag ggc cag aac cag ctc	1056
Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu	
340 345 350	
 tat aac gag ctc aat cta gga cga aga gag gag tac gat gtt ttg gac	1104
Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp	
355 360 365	
 aag aga cgt ggc cgg gac cct gag atg ggg gga aag ccg aga agg aag	1152
Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg Lys	
370 375 380	
 aac cct cag gaa ggc ctg tac aat gaa ctg cag aaa gat aag atg gcg	1200
Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala	
385 390 395 400	
 gag gcc tac agt gag att ggg atg aaa ggc gag cgc cgg agg ggc aag	1248
Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys	
405 410 415	
 ggg cac gat ggc ctt tac cag ggt ctc agt aca gcc acc aag gac acc	1296
Gly His Asp Gly Leu Tyr Gln Gly Ieu Ser Thr Ala Thr Lys Asp Thr	
420 425 430	
 tac gac gcc ctt cac atg cag gcc ctg ccc cct cgc taa gcg gcc gcc	1344
Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg	
435 440	
 acc gca	1350

<210> 2  
<211> 444  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
single chain TCR protein

<400> 2  
Leu Glu Met Gln Arg Asn Leu Gly Ala Val Leu Gly Ile Leu Trp Val  
1 5 10 15

Gln Ile Cys Trp Leu Lys Glu Gln Gln Val Gln Gln Ser Pro Ala Ser  
20 25 30

Leu Val Leu Gln Glu Gly Glu Asn Ala Glu Leu Gln Cys Ser Phe Ser  
 35                          40                          45

Ile Phe Thr Asn Gln Val Gln Trp Phe Tyr Gln Arg Pro Gly Gly Arg  
50 55 60

Leu Val Ser Leu Leu Tyr Asn Pro Ser Gly Thr Lys Gln Ser Gly Arg  
65 70 75 80

Leu Thr Ser Thr Thr Val Ile Lys Glu Arg Arg Ser Ser Leu His Ile  
85 90 95

Ser Ser Ser Gln Ile Thr Asp Ser Gly Thr Tyr Leu Cys Ala Ser Asn  
 100 105 110  
 Ser Gly Gly Ser Asn Ala Lys Leu Thr Phe Gly Lys Gly Thr Lys Leu  
 115 120 125  
 Ser Val Lys Ser Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly  
 130 135 140  
 Gly Gly Ser Glu Ala Ala Val Thr Gln Ser Pro Arg Asn Lys Val Ala  
 145 150 155 160  
 Val Thr Gly Gly Lys Val Thr Leu Ser Cys Asn Gln Thr Asn Asn His  
 165 170 175  
 Asn Asn Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu  
 180 185 190  
 Ile His Tyr Ser Tyr Gly Ala Gly Ser Thr Glu Lys Gly Asp Ile Pro  
 195 200 205  
 Asp Gly Tyr Lys Ala Ser Arg Pro Ser Gln Glu Asn Phe Ser Leu Ile  
 210 215 220  
 Leu Glu Leu Ala Thr Pro Ser Gln Thr Ser Val Tyr Phe Cys Ala Ser  
 225 230 235 240  
 Gly Glu Thr Gly Thr Asn Glu Arg Leu Phe Phe Gly His Gly Thr Lys  
 245 250 255  
 Leu Ser Val Leu Thr Ser Asn Ser Ile Met Tyr Phe Ser His Phe Val  
 260 265 270  
 Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro  
 275 280 285  
 Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro  
 290 295 300  
 Ser Ser Ser Arg Asp Pro Lys Leu Cys Tyr Leu Leu Asp Gly Ile Leu  
 305 310 315 320  
 Phe Ile Tyr Gly Val Ile Leu Thr Ala Leu Phe Leu Arg Val Lys Phe  
 325 330 335  
 Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu  
 340 345 350  
 Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp  
 355 360 365  
 Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg Lys  
 370 375 380  
 Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala  
 385 390 395 400

Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys  
405 410 415

Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp Thr  
420 425 430

Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg  
435 440

<210> 3  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 3  
cccaaggcac ttagtggcat cttc 24

<210> 4  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 4  
ttagacaaag tccccatct ctgacag 27

<210> 5  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 5  
ctgcagctgc tcctcaagta ctattc 26

<210> 6  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 6  
tcccgagaa ggtccacagt tcctttt 28

<210> 7  
<211> 29  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 7  
gaagcagcag agggttgaa gccacatac 29

<210> 8  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 8  
ggcaggctt cagttgtta tgaaggt 27

<210> 9  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 9  
ggttcccttt cagggtccag aatatgt 27

<210> 10  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 10  
gcgaagaact caccctggac tgttcat 27

<210> 11  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 11  
gagctccaca gacaacaaga ggacgcagca 30

<210> 12  
<211> 27  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 12  
gagctgcgac gttccttagt gactgtg 27  
  
<210> 13  
<211> 30  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
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cctcggtcaggc ctgttgtcca atccttctgg 30  
  
<210> 14  
<211> 28  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 14  
cagcctcatc aatctgttct acttggtct 28  
  
<210> 15  
<211> 28  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 15  
ccaccaggga ccacagttta tcattcaa 28  
  
<210> 16  
<211> 27  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 16  
acctggagag aatcctaagg tcatacat 27

<210> 17  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 17  
aggctttgtg tccctgacag tcctgggt 28

<210> 18  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 18  
caagcaaaca ctgttagtgca gagcccttcc 30

<210> 19  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 19  
caagacatcc ataactgcc tacag 25

<210> 20  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 20  
gtgtatgaaa cccaggacag ttcttac 27

<210> 21  
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<220>  
<223> Description of Artificial Sequence: Primer  
  
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ccgtatttct ttcttatgtt gttttggat 29  
  
<210> 22  
<211> 28  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 22  
caaaagctctc catcgctgac tgttcaag 28  
  
<210> 23  
<211> 23  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 23  
atctaattctt ggaaagagca aat 23  
  
<210> 24  
<211> 23  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 24  
ggcgatcttgtt accacgttgtt caa 23  
  
<210> 25  
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<212> DNA  
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<223> Description of Artificial Sequence: Primer  
  
<400> 25  
gtgaaagggc aaggacaaaa agc 23  
  
<210> 26  
<211> 22

<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 26  
gatatgcgaa cagtatctag gc 22

<210> 27  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 27  
acataaatcaa agggaaaggga gaa 23

<210> 28  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 28  
tcctgttgg tcaggaaggg caa 23

<210> 29  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 29  
tacctgtatca aaagaatggg aga 23

<210> 30  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 30  
ataaccatga caatatgtac tgg 23

<210> 31  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 31  
ataaccacaa caacatgtac tgg 23

<210> 32  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 32  
atagccacaa ctacatgtac tgg 23

<210> 33  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 33  
agtttgcaag agttggaaaa cca 23

<210> 34  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 34  
gattatgttt agctacaata ata 23

<210> 35  
<211> 23  
<212> DNA  
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

<400> 35  
acaagggtgac agggaaaggga caa 23

<210> 36  
<211> 23  
<212> DNA  
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<223> Description of Artificial Sequence: Primer  
  
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acctacagaa cccaaaggact cag 23  
  
<210> 37  
<211> 23  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 37  
cagttgcctt cggatcgatt ttc 23  
  
<210> 38  
<211> 23  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 38  
gccgagatca aggttgtggg cag 23  
  
<210> 39  
<211> 23  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer  
  
<400> 39  
agaaccatct gtaagagtgg aac 23  
  
<210> 40  
<211> 23  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Primer

<400> 40 catcaaataa tagatatggg gca	23
<210> 41 <211> 23 <212> DNA <213> Artificial Sequence	
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<400> 41 gtagtcctga aaaagggcac act	23
<210> 42 <211> 22 <212> DNA <213> Artificial Sequence	
<220> <223> Description of Artificial Sequence: Primer	
<400> 42 catctgtcaa agtggcactt ca	22
<210> 43 <211> 393 <212> DNA <213> Homo sapiens	
<220> <221> CDS <222> (1)...(393)	
<400> 43 atg aaa tcc ttg agt gtt tcc cta gtg gtc ctg tgg ctc cag tta aac Met Lys Ser Leu Ser Val Ser Leu Val Val Leu Trp Leu Gln Leu Asn 1 5 10 15	48
tgg gtg cag agc cag cag aag gtg cag cag agc cca gaa tcc ctc agt Trp Val Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ser 20 25 30	96
gtc cca gag gga ggc atg gcc tct ctc aac tgc act tca agt gat cgc Val Pro Glu Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg 35 40 45	144
aat ttt cag tat ttc tgg tgg tac aga cag cat tct gga gaa ggc ccc Asn Phe Gln Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Glu Gly Pro 50 55 60	192
aaa gca ctg atg tcc atc ttc tct gat ggt gac aag aaa gaa ggc aga Lys Ala Leu Met Ser Ile Phe Ser Asp Gly Asp Lys Lys Glu Gly Arg 65 70 75 80	240

ttc aca gct cac ctc aat aag gcc agc ctg cat gtt tcc ctg cac atc 288  
 Phe Thr Ala His Leu Asn Lys Ala Ser Leu His Val Ser Leu His Ile  
 85 90 95

aga gac tcc cag ccc agt gac tcc gct ctc tac ttc tgt gca gtt atg 336  
 Arg Asp Ser Gln Pro Ser Asp Ser Ala Leu Tyr Phe Cys Ala Val Met  
 100 105 110

gat tat aac cag ggg aag ctt atc ttt ggg cag ggt acc aag tta tct 384  
 Asp Tyr Asn Gln Gly Lys Leu Ile Phe Gly Gln Gly Thr Lys Leu Ser  
 115 120 125

atc aag ccc 393  
 Ile Lys Pro  
 130

<210> 44  
 <211> 131  
 <212> PRT  
 <213> Homo sapiens

<400> 44  
 Met Lys Ser Leu Ser Val Ser Leu Val Val Leu Trp Leu Gln Leu Asn 5 10 15  
 1 5 10 15

Trp Val Gln Ser Gln Gln Lys Val Gln Gln Ser Pro Glu Ser Leu Ser  
 20 25 30

Val Pro Glu Gly Gly Met Ala Ser Leu Asn Cys Thr Ser Ser Asp Arg  
 35 40 45

Asn Phe Gln Tyr Phe Trp Trp Tyr Arg Gln His Ser Gly Glu Gly Pro  
 50 55 60

Lys Ala Leu Met Ser Ile Phe Ser Asp Gly Asp Lys Lys Glu Gly Arg  
 65 70 75 80

Phe Thr Ala His Leu Asn Lys Ala Ser Leu His Val Ser Leu His Ile  
 85 90 95

Arg Asp Ser Gln Pro Ser Asp Ser Ala Leu Tyr Phe Cys Ala Val Met  
 100 105 110

Asp Tyr Asn Gln Gly Lys Leu Ile Phe Gly Gln Gly Thr Lys Leu Ser  
 115 120 125

Ile Lys Pro  
 130

<210> 45  
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 <212> DNA  
 <213> Homo sapiens

<220>  
<221> CDS  
<222> (1)..(402)

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<400> 45
atg ggc tcc aga ctc ttc gtg gtt ttg att ctc ctg tgt gca aaa 48
Met Gly Ser Arg Leu Phe Phe Val Val Ile Leu Leu Cys Ala Lys
          1           5           10          15

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cac atg gag gct gca gtc acc caa agt cca aga agc aag gtg gca gta 96
His Met Glu Ala Ala Val Thr Gln Ser Pro Arg Ser Lys Val Ala Val
          20           25           30

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aca gga gga aag gtg aca ttg agc tgt cac cag act aat aac cat gac 144
Thr Gly Gly Lys Val Thr Leu Ser Cys His Gln Thr Asn Asn His Asp
      35           40           45

```

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tat atg tac tgg tat cgg cag gac acg ggg cat ggg ctg agg ctg atc 192
Tyr Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile
      50          55          60

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cat tac tca tat gtc gct gac agc acg gag aaa gga gat atc cct gat	240
His Tyr Ser Tyr Val Ala Asp Ser Thr Glu Lys Gly Asp Ile Pro Asp	
65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	

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ggg tac aag gcc tcc aga cca agc caa gag aat ttc tct ctc att ctg 288
Gly Tyr Lys Ala Ser Arg Pro Ser Gln Glu Asn Phe Ser Leu Ile Leu
          85           90           95

```

```

gag ttg gct tcc ctt tct cag tca gct gta tat ttc tgt gcc agc agc 336
Glu Leu Ala Ser Leu Ser Gln Ser Ala Val Tyr Phe Cys Ala Ser Ser
          100           105           110

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gat ttc gcc ggg aca ggg ggc ttc tat gaa cag tac ttc ggt ccc ggc 384
Asp Phe Ala Gly Thr Gly Gly Phe Tyr Glu Gln Tyr Phe Gly Pro Gly
    115          120          125

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acc agg ctc acg gtt tct  
Thr Arg Leu Thr Val Ser  
130

<210> 46

<400> 46

Met Glv S

3

20 25 30

35 40 45

Tyr Met Tyr Trp Tyr Arg Gln Asp Thr Gly His Gly Leu Arg Leu Ile  
50 55 60

His Tyr Ser Tyr Val Ala Asp Ser Thr Glu Lys Gly Asp Ile Pro Asp  
65 70 75 80

Gly Tyr Lys Ala Ser Arg Pro Ser Gln Glu Asn Phe Ser Leu Ile Leu  
85 90 95

Glu Leu Ala Ser Leu Ser Gln Ser Ala Val Tyr Phe Cys Ala Ser Ser  
100 105 110

Asp Phe Ala Gly Thr Gly Phe Tyr Glu Gln Tyr Phe Gly Pro Gly  
115 120 125

Thr Arg Leu Thr Val Ser  
130

&lt;210&gt; 47

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 47

Lys Ile Phe Gly Ser Leu Ala Phe Leu  
1 5

&lt;210&gt; 48

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 48

Thr Leu Gln Gly Leu Gly Ile Ser Trp Leu  
1 5 10

&lt;210&gt; 49

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

<400> 49  
Val Met Ala Gly Val Gly Ser Pro Tyr Val  
1 5 10

<210> 50  
<211> 10  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 50  
Val Leu Gln Gly Leu Pro Arg Glu Tyr Val  
1 5 10

<210> 51  
<211> 9  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 51  
His Leu Tyr Gln Gly Cys Gln Val Val  
1 5

<210> 52  
<211> 9  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 52  
Arg Leu Leu Gln Glu Thr Glu Leu Val  
1 5

<210> 53  
<211> 9  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 53  
Lys Ile Pro Val Ala Ile Lys Val Leu  
1 5

<210> 54  
<211> 9  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic peptide

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Cys Leu Thr Ser Thr Val Gln Leu Val  
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